

AMENDMENT AND RESPONSE AND RCE UNDER 37 CFR § 1.114

Serial Number: 09/816,603

Filing Date: March 23, 2001

Title: CONTINUOUS PROCESSING OF THIN-FILM BATTERIES AND LIKE DEVICES

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IN THE CLAIMS

Please amend the claims as follows:

1-10. (Cancelled)

11. (Previously presented) A system for making a thin-film device, the system comprising:
a first substrate-supply station that supplies a substrate having a major surface area, the substrate having a first layer, having a composition different than the substrate, formed on a first surface area of the substrate;
a first deposition station that deposits a second layer onto the first layer, wherein the first deposition station supplies an amount of ion-assist energy to the second layer to aid in crystalline layer formation while controlling a stoichiometry of the crystalline layer without substantially heating the substrate, wherein the first and second layers are part of a battery; and
a deposition station that deposits a photovoltaic cell on the battery.

12. (Cancelled)

13. (Previously presented) The system according to claim 11, the system further comprising:
a station that attaches an integrated circuit to the substrate; and
a wiring station that forms conductive paths between the integrated circuit, the battery and the photovoltaic cell.

14. (Previously presented) The system according to claim 11, the system further comprising:
a motion device that moves the substrate, wherein the first and second layers are deposited on the substrate while the substrate moves in a continuous motion.

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15. (Original) The system according to claim 11, wherein the substrate is a flexible material supplied from a roll, and the first and second layers are deposited on the substrate while the substrate moves in a continuous motion.

16. (Previously presented) The system according to claim 11, wherein the first and second layer forms a cathode layer of a battery that includes the cathode layer; an anode layer, and an electrolyte layer located between and electrically isolating the anode layer from the cathode layer, wherein the anode or the cathode or both include an intercalation material.

17. (Original) The system according to claim 11, further comprising a deposition station that deposits an electrical circuit on the battery.

18. (Original) The system according to claim 11, wherein the substrate is a rigid material supplied from a cassette, and the first and second layers are deposited on the substrate while the substrate moves in a continuous motion.

19. (Original) The system according to claim 11, wherein the substrate is a polymer material having a melting point below about 700 degrees Celsius.

20. (Original) The system according to claim 11, wherein the energizing of the second layer includes supplying ions of at least 5eV.

21. (Previously presented) A system for making a thin-film device, the system comprising:
a substrate-supply station that supplies a substrate having a major surface area, the substrate having a first layer on a first surface area of the substrate's major surface area;
means for depositing a second layer onto the first layer, wherein the means supplies energy to the second layer to aid in crystalline layer formation without substantially heating the substrate, wherein the first and second layers are part of a battery; and
a deposition station that deposits a photovoltaic cell on the battery.

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22. (Previously presented) A system for making a thin-film device, the system comprising:
a substrate-supply station that supplies a substrate having a major surface area;
a plurality of deposition stations that deposit layers onto the substrate including a first deposition station and a second deposition station, wherein the first and the second deposition stations each supply an amount of ion assist energy to the respective layers to aid in crystalline layer formation while controlling a stoichiometry of the respective crystalline layers without substantially heating the substrate.

23. (Currently amended) The system of claim [[22]] 22, wherein the substrate-supply station supplies a continuous plastic sheet.

24. (Currently amended) The system of claim [[22]] 22, wherein the substrate-supply station supplies a continuous set of wafers.

25. (Currently amended) The system of claim [[22]] 22, wherein the plurality of deposition stations deposit a thin film battery.

26. (Currently amended) The system of claim [[22]] 22, wherein the plurality of deposition stations deposits a capacitor.

27. (Currently amended) The system of claim [[22]] 22, wherein the plurality of deposition stations deposits a thin film battery and a device powered by the thin film battery.

28. (Currently amended) The system of claim [[22]] 22, wherein the plurality of deposition stations deposit a thin film battery and a device powered by the thin film battery, wherein the device is deposited onto the thin film battery.

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29. (Currently amended) The system of claim [[22]] 22, wherein the plurality of deposition stations deposit a thin film battery and a set of traces for electrically connecting a device to the thin film battery.

30. (Currently amended) The system of claim [[29]] 29, further comprising a placement device for placing components onto the traces.

31. (Currently amended) The system of claim [[22]] 22, wherein the at least one deposition station deposits an energy-conversion device.

32. (Previously presented) The system of claim 11, wherein the second layer is a LiCoO₂ intercalation material, and the ion-assist includes ionized oxygen that combines with LiCo to form the LiCoO₂ intercalation material.

33. (Previously presented) The system according to claim 11, further comprising a second substrate-supply station that supplies the substrate before the first layer is deposited; a second deposition station that deposits the first layer onto the substrate, wherein the second deposition station supplies ion-assist energy to the first layer to aid in crystalline layer formation while controlling a stoichiometry of the crystalline layer without substantially heating the substrate.

34-35. (Cancelled)

36. (Previously presented) The system according to claim 22, wherein the substrate is a polymer material having a melting point below about 700 degrees Celsius.

37. (Previously presented) The system according to claim 22, wherein the energizing of the second layer includes supplying ions of at least 5eV.

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38. (Previously presented) The system according to claim 22, wherein the substrate is a polymer material having a melting point below about 700 degrees Celsius, and wherein the energizing of the second layer includes supplying ions of at least 5eV.

39. (Previously presented) The system according to claim 21, wherein the substrate-supply station supplies a continuous plastic sheet.

40. (Previously presented) The system according to claim 21, wherein the substrate-supply station supplies a sequential set of wafers.

41. (Cancelled)

42. (Previously presented) The system according to claim 21, wherein the means for depositing the second layer includes ion-assist means for aiding in crystal formation.

43. (Previously presented) A system for making a thin-film device, the system comprising:
a substrate-supply station that supplies a substrate having a major surface area, the substrate having a first layer on a first surface area of the substrate's major surface area;
means for depositing a second layer onto the first layer while supplying an amount of ion-assist energy to the second layer to aid in crystalline layer formation without substantially heating the substrate, wherein the first and second layers are part of a battery; and
a deposition station that deposits a photovoltaic cell on the battery.

44. (Previously presented) The system of claim 11, wherein the substrate is a flexible material supplied from a roll, and the second layer are deposited on the substrate while the substrate moves in a continuous motion, wherein the second layer forms an electrolyte layer of a battery that includes a cathode layer, an anode layer, and the electrolyte layer located between and electrically isolating the anode layer from the cathode layer, wherein the anode or the cathode or both include an intercalation material.

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45. (Previously presented) The system of claim 22, wherein the substrate is a flexible material supplied from a roll, and the first and second layers are deposited on the substrate while the substrate moves in a continuous motion, wherein the first layer forms a cathode layer of a battery, the second layer forms an electrolyte layer of the battery, the battery including the cathode layer; an anode layer, and the electrolyte layer located between and electrically isolating the anode layer from the cathode layer, wherein the anode or the cathode or both include an intercalation material.

46. (Previously presented) The system according to claim 11, wherein the substrate is a material having a temperature at which it experiences thermal degradation of less than or equal to about 300 degrees Celsius.